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ORIGINAL PAPER

# Where you stand depends on where you live: county voting on the Texas secession referendum

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**Abstract**
During the first half of the 19th century, Western Texas was a "trap baited with grass" that attracted migrants hoping to farm. When settlers on the wrong side of an unknown, invisible line could not build successful farms, residents in those counties voted to remain in the Union at far higher rates than residents in neighboring counties who could farm. The connection between the vote and economic interest was obvious, as those without suitable land could not make use of enslaved labor, which was too expensive given the implicit marginal product of labor. Because the location of settlement was plausibly random, these results highlight the importance of economic interest as a determinant of even fundamental moral beliefs that affect vote choice.

**Keywords** Voting · Secession · Slavery · Constitutions

**JEL Classification** P16 · D72 · Q54

## 1 Introduction

The secession of the Confederate U.S. states in 1861 provides a number of independent examples of the decision to accept a constitutional system or demand change (Anderson, 2004; Stampp, 1978; Voight, 1999).[1] Previous research on voting behavior in secession ballots finds that both economic interests and political

[1] The problem of secession and attitudes toward slavery has long interested CPE public choice scholars (for a review, see Grynaviski and Munger, 2014) and the problem of rebellion and secession (Kurrild-Klitgaard, 2002), as well as the political economy of the decision by the North to contest the attempt by the South to leave the union (Liscow, 2012). Other work, such as Reksulak, Garahan, and Shughart (2007) use correlates of an attitude to explain that attitude. Further, previous research finds that delegates to secession conventions voted in line with the economic interests of their constituents (Wooster, 1962).

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attitudes influence choice (Heckelman & Dinan, 2007). We advance this agenda by studying a situation with "as if" randomly assigned economic interests, and then measuring the voting response.

This paper exploits an invisible (over the relevant period) quirk of geography to identify a natural experiment, with "as if random" sorting of an otherwise homogenous population in 1860-era Texas. This research design allows us to analyze the pattern of voting on the Texas Secession Resolution of February 23, 1861 (Timmons, 1973). We use the fact that there is a surprisingly sharp line (actually, a curve) that separates the land area of central Texas where sustained farming–and by implication slavery–are viable.

It has been said that land west of the line was "a trap, baited with grass" (Caro, 1982). We use county-level vote shares on the "Secession Referendum" to show that a significant component of the differences across counties is explained by the location of the county to the east or west of the "dry line," marking the point where rainfall is consistently less than 30 inches per year. In simple terms, then, since this area was settled more or less at random by homogenous ethnic and cultural groups, "preferences" depend on interests, even if the division in interests is not immediately apparent. In the case of the question of Texas Secession in 1861, then, where one stood depended on where one lived.[2]

Our contribution is to demonstrate, using a design that allows us to identify causality, that the economic interest of the citizen plays a significant role in determining the moral or social preference expressed in voting. Counties east of "the line" were substantially more likely to favor secession, while counties to the west of the line, settled by the same demographic groups at the same time, were much less likely to favor secession. Texas is an especially interesting test case, because it had struggled for US statehood, and in fact had been a state for only just over a decade. Yet the state voted to secede from the Union and join the Confederacy. Texas's political behavior aligns with theoretical research arguing that after federations form, member benefits can diverge from expectations, leading members to pursue secession (Huysmans & Crombez, 2020).

The paper is organized as follows. The next section describes the problem of federalism and secession briefly, and reviews the public choice literature. Then the specific case of Texas is analyzed, to provide some background for the decision. Section 3 discusses the special circumstances that guided the collection of data, and the value of the random assignment of individuals to counties to different "treatment groups." Sect. 4 presents the analysis, illustrating that there are substantial differences in the response of otherwise identical populations to different conditions. The

[2] As Voight (2020) puts it:

"The basic assumption is that constitutions have distributive consequences. It follows that different groups prefer different rule sets, namely those sets that serve their own interests best. The relative power of groups might change over time, e.g., due to technological change. If the constitution does not reflect the relative power of the various groups anymore, those who have gained in power will demand constitutional change in their favor." (p. 38).

For a review of other literature on this topic, see Dougherty (2001) and Vanberg (2018); for a discussion of the problem of knowledge and voting, see López and Sutter (2004).

concluding section suggests some future applications of this simple kind of procedure in CPE research.

## 2 Federalism, secession, and texas

In American history, a number of states or groups of states have threatened secession, ranging from the New England states in the 1820s to current, and apparently semi-serious secession movements in present-day California and Texas. The most famous attempt at secession, of course, was also the most catastrophic: the secession of the "southern" states in 1861, which resulted in the U.S. Civil War, lasting until 1865. Among these, Texas is of particular interest, because—as Buenger (1983) points out—the "Republic of Texas" had single-mindedly focused on joining the United States even before it became a separate nation.[3]

Beyond the American case, this paper aligns with research on economic voting in general and on the role of more recent referenda focused on secession. On economic voting researchers have studied the magnitude of economic interests at the district level for U.S. House of Representatives elections (Levitt & Snyder, 1997). Internationally a similar relationship extends to the individual level in Swedish parliamentary elections (Elinder et al., 2015). Finally and most directly speaking to secession and economic voting, recent work finds that tertiary education alone can explain 80% of the variation in regional voting for Brexit in England (Nikolka & Poutvaara, 2016).

Buenger's explanation for why Texas "chose secession" is worth reading in full, as he uses an approach congenial to methodological individualism, noting that the votes for, and for that matter against, had a variety of sometimes contradictory motivations. The vote was split, and the political calculations and sense of fevered organization were complex. But much of the explanation appears to a concern the newly empowered Republicans, led of course by Abraham Lincoln as President (who in February 1861 had not even yet been inaugurated[4]), would not respect rights in property, including rights to own slaves.

The secession vote was held in February, after months of informal and sometimes violent campaigning. The formal process had been initiated by the vote of the State Convention, on February 1, where the vote was 166 in favor of secession and 8 opposed. The referendum, with many of the expected problems of counting mail ballots, was held on February 23. The votes were counted in haphazard fashion, as Timmons (1973) documents, but the overall vote was about 40,000 "for" secession and 14,000 "against." The campaign was rancorous, dividing community loyalties

[3] Buenger (1983) elaborates:
"Texans had continually asked to become part of the Union from 1836 to 1845. Their precarious position on the southwestern frontier reminded them daily of the value of belonging to a large and powerful nation. Prosperity seemed to preclude a political upheaval in 1860. The burgeoning trade in cotton, hides, and sugar flowing out of the commercial centers of Texas gave promise of making it one of the richest states in the union." (p. 151).

[4] Until the 1936 election, inauguration of the U.S. president was March 4, not January 20.

and roiling the already unsettled partisan atmosphere.[5] It is unclear whether the majority (nearly 75%) in favor of secession had held these views from the start, or whether the reaction to John Brown's raid and the ensuing scare tactics of racial fearmongering turned the tide.[6]

Our approach is to explain the pattern of support for remaining in the Union, using counties as units (it happens that vote totals are reported at the county level, rather than municipalities or other entities). The following section describes why using an identifiable geographic location as a means for counting votes is important for our results, and describes the logic of our analysis.

## 3 Data and research plan

In the "Biological Survey of Texas," written in 1905 for the U.S. Department of Agriculture, Vernon Bailey writes of a "well-defined division between the two regions, approximately where the annual rainfall diminishes to below 30 inches, or near the ninety-eighth meridian" (Bailey, 1905, p. 23). Likewise, the *1921 Yearbook of the United States* asserts that "the United States may be divided into an eastern half and a western half, characterized, broadly speaking, one by a sufficient and the other by an insufficient amount of rainfall for the successful production of crops by ordinary farming methods" (Baker, 1922; p. 413).

An isohyet is a line on a map reflecting the locus of equal rainfall; points to the east (right) of the isohyet in Fig. 1 receive 30 inches or more of rainfall annually; those west of the isohyet receive less. This means that all counties to the right of the heavy curved line receive enough rain, most of the time, for sustained agriculture. In any given year, there could be a drought that makes farming right of the line difficult, or a period of unusually high rainfall that would enable successful farming right of the line. The line is drawn to reflect the estimated average at the time of the Texas secession vote in 1861. Interestingly, it appears that today the isohyet for 30 inches has moved 70 miles east in many locations, though farming today is more likely to rely on irrigation than depending on rainfall. (Seager et al., 2018).

[5] For example, Buenger (1979) discusses differences in views of the German community in particular, showing that while some vocal opponents of secession were German the majority of Texas Germans actually supported secession.

[6] As Timmons (1973) put it:

There is no doubt that the secessionists played on the fears, emotions, and prejudices of the people. Commenting on accounts of incendiarism and an alleged abolitionist plot in Texas, as early as August 25. 1860, the San Antonio Ledger and Texan had observed: "the celebrated John Brown raid was mere child's play, in comparison with the state of things which now exists in Texas." The February 23,1861, issue of the Texas State Gazette was a particularly rank appeal to racial prejudice; an open letter "To the Working Men of Travis County" charged that Abraham Lincoln was the "apostle of freesoilism and abolitionism in its worst forms," and John Marshall's editorial closed: "are [you] willing to tolerate social and political equality with the negro? Are you willing that they shall control you by their votes? Are you willing that the white and negro races shall amalgamate?"!! (Timmons, 1973, p. 21).

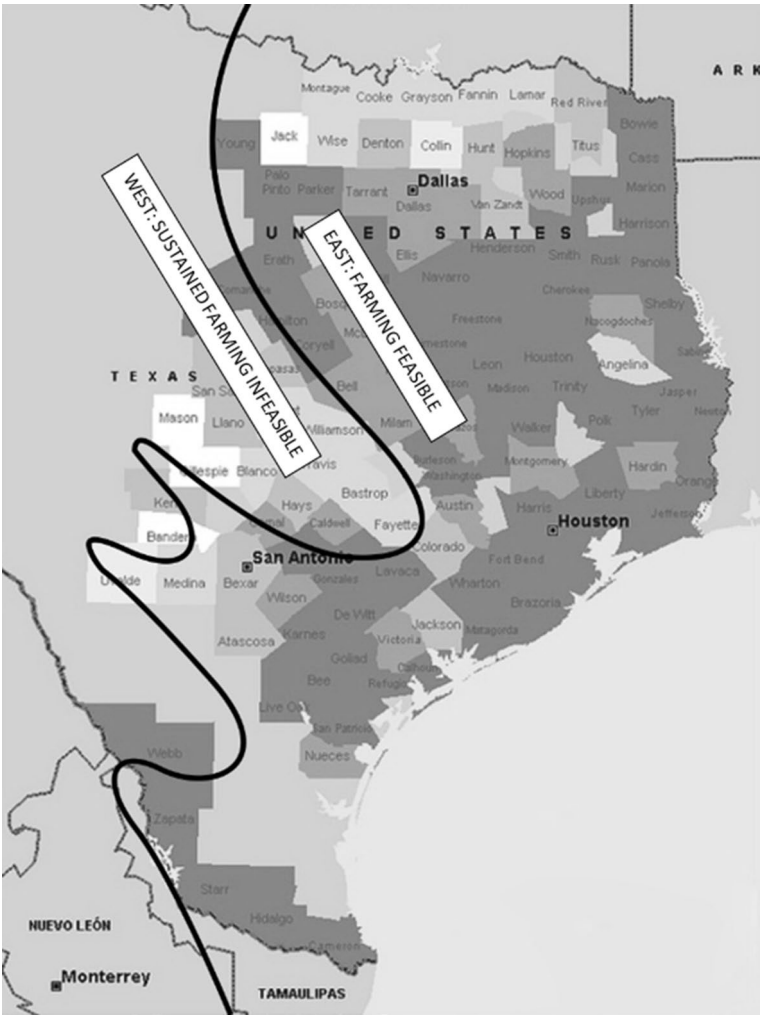


**Fig. 1** Isohyet for 30 Inches Annual Rainfall and County Vote Shares (darker = secede)

For present purposes, this *first* fact—that there is a clear dividing line that can be drawn on a map, identifying with considerable certainty locations where farming was possible and where it was not—is a necessary condition for carrying out our analysis. The *second* claim on which our analysis rests is a conjecture about a sufficient condition, though we think it is a plausible one. That conjecture is this: we can, with hindsight, identify the line, but the settlers moving to Texas at the time could not have done so. In fact, settlers did not know that the feasibility boundary existed, let alone where it was. The area had been settled for no more than 20 years, and in some cases much less, with waves of migrants throughout the ‘40 s and ‘50 s.

Writing on what brought migrants to Texas, historian T.R. Fehrenbach claims that:

> The railroads were indeed forced to promote settlement once they had laid track into the desert; they did their best to induce farmers to go where no 19th-century farmer should have gone. Not the rails but the development of widespread irrigation techniques in the 20th century allowed cultivation west of the 100th meridian. (p. 605).

While the railroads were courting migrants, there were no other sources of more accurate information. Fehrenbach writes:

> Texas papers rarely commented on the dryness anywhere. Official pressure even caused regions where rainfall was less than fifteen inches annually to be described as “less humid" in reports and geography books. The term “arid" was angrily avoided. This is understandable psychologically, when it is realized that climatically speaking, the arid, semiarid, and sub-humid regions of Texas comprise exactly one-half of the entire state. These were conditions with which the Anglo-American had no experience" [Fehrenbach, 1968, p. 606].

The fact that no one had any means of understanding the implication of the arid climate, which after all did not appear to be a desert to the untrained eye, must be considered in terms of the two claims made above: there really was a line, and it was actually invisible. Webb references the “imperceptible" change in the environment:

> When people first crossed this line they did not immediately realize the imperceptible change that had taken place in their environment, nor, more is the tragedy, did they foresee the full consequences which that change was to bring in their own characters and in their modes of life. (Webb, 1931, p. 9]

Finally, and most dramatically, Caro makes the case states that Hill Country settlers did not know, and could not have known, that they had crossed over the invisible boundary that would make sustained farming impossible.

> At the time the Hill Country was being settled, there was no understanding at all, not of the climatic conditions and certainly not of their consequences ... The first settlers did not realize they were crossing a significant line. They came into the new land blithely. After all those years in which they had feared their fate was poverty, they saw at last the glimmerings of a new hope. But in reality, from the moment they first decided to settle in this new land, their fate was sealed. (Caro, 1982, p. 14).

Of course, there is one more aspect to the argument that should be established: even if the line were invisible, the difference in means should become obvious within a few years. After all, being unable to grow crops is a powerful selection mechanism. The last aspect of the problem, then, is variance. If your prior belief is that the plentiful grass and obvious creekbeds of the Hill Country indicate sufficient

water for farming, it would take years before you would update this belief.[7] By cruel historical coincidence the early 1850s were an especially wet time in the Texas Hill Country. Caro (1982) describes the setting:

> …the Hill Country was hard on dreams. The Hill Country was a trap—a trap baited with grass… (p. 8).
> Rain can be plentiful in the Hill Country not just for one year, but for two or three or more in a row. ... And when, suddenly, the cycle shifted and the shift could be very sudden; during the 1950s, it rained forty-one inches one year, eleven the next-who could blame these men for being sure that the dry spell was an aberration; that it would surely rain the next year-or the next? It had to, they felt; there was plenty of rain in the Hill Country-hadn't they seen it with their own eyes? (p. 56)

What this meant, from a simple Bayesian perspective, is that the line was not only *invisible* but also *wide*. One could convince oneself that the dry years were the aberration, at least until the early 1850s. By 1861, there had been enough observations that the people who lived on the two sides of the line had a more accurate picture.

We recognize the possibility that settlers on either side of the isohyet line differed before settlement. However we think it unlikely primarily because no one at the time was aware of the existence of the rainfall line. Had people known, settlers hoping to farm likely would not have approached the meridian line. It is clear that there was substantial disagreement among German settlers in Texas in terms of support for slavery (Biesele, 1931, p. 339). Debate within the German community at the time settlers were reaching the area seems to match ignorance of the climatic conditions, and raise confidence that differences in the proportion of German ethnic origin alone is not sufficient to explain the observed differences.

And that is the basis for our natural experiment. Having a line that demarcates a "treatment" (climate suitable for agriculture) and "control" (climate not suitable for agriculture) groups that are clearly identified to the researcher, but which was not perceived or acted on by the "subjects" suggests a Geographic Regression Discontinuity, or GRD design. As Peele and Titiunik (2016) define it, a GRD is "a design in which a geographic or administrative boundary splits units into treated and control

[7] It's even worse than that. Astonishingly, one popular view at the time was the "Rain follows the plow" theory (Libecap & Hansen, 2002), which became popular during westward expansion in the 1860s and 1870s. Scientists thought that plowing soil exposed moisture in the ground to the sky; others thought that human-caused vibrations created clouds. There was even widespread dynamiting of air in the Great Plains during the 1870s (Reisner, 1993). In his 1881 book on the West, Charles Wilber wrote: "the plow was the unerring prophet, the procuring cause … The Raindrop never fails to fall and answer to the imploring power or prayer of labor." (Wilber, 1881, p. 69). Thornthwaite describes the problem of variance succinctly:

> In some years the amount and seasonal distribution of rainfall is entirely adequate for successful agriculture; in others, the rainfall is so reduced that crop production is impossible. No corresponding risk exists in a continuously arid climate, as at Indio, because in no year does the weather encourage an attempt at agriculture. In the Great Plains the rainfall surpasses that of semiarid climates with sufficient frequency to encourage agricultural extension, but not to make successful agriculture possible over a period of years. (Thornthwaite, 1941, p. 180).

**Table 1** Summary statistics

| Statistic | N | Mean | St. Dev | Min | Pctl(25) | Pctl(75) | Max |
|---|---|---|---|---|---|---|---|
| For Secession | 121 | 376.917 | 283.970 | 2 | 145 | 527 | 1.376 |
| Against Secession | 121 | 120.281 | 183.929 | 0 | 15 | 135 | 948 |
| Percent For | 121 | 0.771 | 0.232 | 0.030 | 0.640 | 0.950 | 1.000 |
| Percent Against | 121 | 0.229 | 0.232 | 0.000 | 0.050 | 0.360 | 0.970 |
| Share Enslaved | 121 | 1.545 | 0.683 | 1 | 1 | 2 | 3 |

areas and analysts make the case that the division into treated and control areas occurs in an as-if random fashion." (p. 66), In the following section we describe how the data were collected and the results.

## 4 Data and results

Note that our estimation strategy diverges from a formal GRD design, for reasons of data availability. First, because the isohyet line does not perfectly track county boundaries, we use a simple coding rule. When more than half of the county falls on one side of the line or the other, we classify the county as entirely on that majority-side of the boundary. Second, not all relevant variables are continuous at the boundary point. The independent variable for the share of the population enslaved is measured at the categorical level. We note that the isohyet curve represents more than just momentary slaveholder interests. It suggests the possibility of future use of slave labor. If we only looked at the share of enslaved persons in each county, we would miss the potential interest of local farmers. Because data limitations preclude using the precise distance of the centroid of a county—the standard technique for a regression discontinuity design—from the rainfall isohyet, we run a robustness check on our analysis looking only at those counties immediately on either side of the line. We find substantively identical results, increasing our confidence in the results with the full sample.

We use a straightforward approach to test whether settlement on one side of the line or the other influenced the vote. We gather data on each Texas county that participated in the 1861 referendum (Timmons, 1973) and then compute the percentage of voters in each county who voted for secession. We then georeferenced the Isohyet map to the county vote shares and identified counties west of the rainfall line (Fig. 1). We developed this map referencing counties as they existed during the 1861 referendum with the Department of the Interior-sourced isohyet map from 1868. As noted earlier, the location of the line is based on rainfall totals from the 1800s; the climate is dryer now, and the 30-inch isohyet would be substantially further east in most areas. Table 1 shows summary statistics, including the raw vote counts, the shares for and against secession, and the share of the population in each county enslaved.

**Table 2** Counties vs. Location

| Observations are Texas counties | East | West | *Column Marginals* |
|---|---|---|---|
| Voted against secession | 10 (15) | 8 (3) | 18 |
| Vote for secession | 89 (83) | 14 (19) | 103 |
| *Row Marginals* | 99 | 22 | 121 (Total) |

The chi-square statistic is 9.8; *p*-value is 0.002

Our first test is whether there is a difference in mean vote share between these counties. We find strong support for our expectation that settlement west of the rainfall line (and as a result in an area where sustained agriculture was impossible) influenced the vote. Table 2 shows the raw county votes on either side of the line. There are 99 counties where sustained agriculture was possible, and 22 where it was not. If the vote for secession was random (meaning that our identified rainfall line had no effect on the referendum), then 15 counties east of the line and 3 on the west (reflected in the table in parentheses) would vote to remain in the union. But 9 counties east of the line and 8 in the west voted to remain.

We also consider a linear model with controls for the share of the population enslaved. Due to data availability, we identify counties with less than 25% of the population is enslaved in 1860, those with 25–50% of the population enslaved, and those with more than 50% of the population. In the regression tables the omitted category is those counties with less than 25% of the population enslaved. We find that the percent of the population voting for secession west of the rainfall line is 18% lower than in the east after controlling for the number of votes cast and the share enslaved. To put that in perspective, going from less than 25% of the population

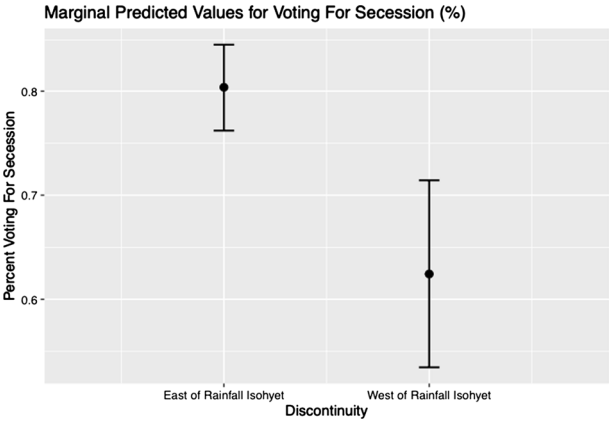


**Fig. 2** Marginal Predicted Vote Share in East and West

enslaved to more than half has a similar effect on the vote for secession as location on either side of the rainfall line. Note that we are not assuming that higher shares per capita means that more voters owned slaves. Instead, we view this exercise as telling us that anticipated future interests had as much of an effect on voting behavior as perceived current interests. We treat the share of the population enslaved as a measure of current interest because even though many residents did not own slaves, the local economy would have been influenced by the presence of coerced labor.

Figure 2 shows the results graphically, with regression tables in the appendix. Because the percent voting for secession is bound by 0 at the lower end and 1 at the higher end, and there are counties where the vote was unanimous, we also use a logistic model and find no substantive difference (see the appendix). To approximate the Geographic Regression Discontinuity approach more closely, we run a version of the model that considers only the 36 counties that directly border the isohyet. The results are consistent with the main analysis (see the appendix).

The upshot of our analysis is that settlement on either side of the rainfall line had a dramatic influence on county votes for secession—perhaps a decisive impact. Roughly half of the counties in the west, where sustained agriculture was impossible, voted to remain in the union. And we find that expectations about the sustainability of agriculture had as much of an impact on the vote as the share of the population enslaved, providing further evidence that expectations for the economic future shaped people's expressed preferences.

## 5 Conclusions

The problem of federalism as a means of ensuring an option for "exit" have long been a key aspect of both normative and practical Public Choice. Analyzing preferences toward federal structures have long been an activity for Public Choice. But there are important difficulties in separating beliefs and values about the ideal form of government and "preferences" that may respond to interests.

We have analyzed the pattern of voting on the Secession Referendum in February 1861 in Texas, using county vote totals. The question motivating the study is whether votes are affected by a "treatment" involving economic interests associated with slavery as a motivation for favoring secession. Our research design leverages a natural experiment, where settlement took place across a broad region, but some settlers were west of the line of agricultural feasibility and some were on the east side. This line, we argue was specifically and (fairly) precisely available to researchers with rainfall records and historical hindsight, but was invisible to participants.

Our findings show that there was a substantial, and statistically significant, difference in voting patterns on the two sides of the geographic line. As a robustness test we control for whether slavery was actually established in the county. There are problems with this test, of course, if the distribution of slave ownership is endogenous to weather patterns. But even with this control in place we still find that geographic position east or west of the viability isohyet explains voting preferences.

# Appendix

## Additional regression tables

See Tables 3, 4, and 5.

**Table 3** shows the results of OLS regressions

| | Dependent variable | |
|---|---|---|
| | PercentFor | |
| | (1) | (2) |
| West of rainfall isohyet | −0.214*** | −0.179*** |
| | (0.051) | (0.051) |
| ShareEnslaved2 | | 0.069 |
| | | (0.042) |
| ShareEnslaved3 | | 0.195*** |
| | | (0.065) |
| Constant | 0.810*** | 0.760*** |
| | (0.022) | (0.029) |
| Observations | 121 | 121 |
| $R^2$ | 0.128 | 0.194 |
| Adjusted $R^2$ | 0.120 | 0.174 |

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

**Table 4** shows the result of logistic regressions, adding covariates for the share of the population enslaved

| | Dependent variable | |
|---|---|---|
| | PercentFor | |
| | (1) | (2) |
| West of rainfall isohyet | −1.060** | −0.860* |
| | (0.504) | (0.515) |
| ShareEnslaved2 | | 0.398 |
| | | (0.492) |
| ShareEnslaved3 | | 1.883 |
| | | (1.369) |
| Constant | 1.450*** | 1.163*** |
| | (0.256) | (0.316) |
| Observations | 121 | 121 |
| Log likelihood | −49.856 | −48.208 |
| Akaike Inf. Crit | 103.712 | 104.416 |

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

**Table 5** shows the results of OLS regressions for the subset of counties just on either side of the isohyet

| | Dependent variable | |
|---|---|---|
| | PercentFor | |
| | (1) | (2) |
| West of rainfall isohyet | −0.178** | −0.186** |
| | (0.087) | (0.082) |
| ShareEnslaved2 | −0.022 | |
| | (0.092) | |
| ShareEnslaved3 | 0.170 | |
| | (0.258) | |
| Constant | 0.790*** | 0.792*** |
| | (0.077) | (0.062) |
| Observations | 36 | 36 |
| $R^2$ | 0.147 | 0.132 |
| Adjusted $R^2$ | 0.067 | 0.107 |

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

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